

6th Grade UNIT 2 OVERVIEW: Catch a Wave!

Unit Outcomes At the end of this unit, your student should be able to:	Key Vocabulary Terms to deepen the student's understanding
<ul style="list-style-type: none"> ✓ Explain that earthquakes, light and sound are all types of waves with unique properties and there are differences and similarities between electromagnetic and physical waves. ✓ Recognize ... <ul style="list-style-type: none"> ○ Sound travels in waves ○ Sound vibrations are the result of disturbances that cause vibrations ○ Sound waves are affected by the mediums through which they travel ○ The structure of the human ear and its connection to our brain allows us to hear certain wavelengths ✓ Describe the different wavelengths that make up the electromagnetic spectrum ✓ Identify which wavelengths are visible by humans. ✓ Illustrate how energy travels in the direction of warmer to cooler temperatures. ✓ Compare energy transfer by conduction, radiation and convection. ✓ Explain that different types of matter respond differently to different electromagnetic waves: some absorb or scatter, which can change the temperature. ✓ Describe how matter changes when exposed to heat (expands) and removed from heat (shrinks). ✓ Identify which materials would make good conductors or insulators, based on their response to heat. 	<ul style="list-style-type: none"> ✓ Energy ✓ Amplitude ✓ Frequency ✓ Transverse Wave ✓ Longitudinal Wave ✓ Light ✓ Sound ✓ Sound waves ✓ Disturbance ✓ Wavelengths ✓ Electromagnetic Spectrum ✓ Conduction ✓ Convection ✓ Radiation ✓ Energy transfer ✓ Medium ✓ Earthquakes ✓ Translucent ✓ Transparent ✓ Opaque ✓ Absorbing ✓ Scattering ✓ Conductor ✓ Insulator ✓ Thermal Expansion ✓ Trough ✓ Crest ✓ Rarefaction ✓ Compression
Key Standards Addressed Connections to Common Core/NC Essential Standards	Where This Unit Fits Connections to prior and future learning
<p>6.P.1.1 Compare the properties of waves to the wavelike property of energy in earthquakes, light, and sound.</p> <p>6.P.1.2 Explain the relationship among visible light, the electromagnetic spectrum and sight.</p> <p>6.P.1.3 Explain the relationship among the rate of vibration, the medium through which vibrations travel, sound and heating.</p> <p>6.P.3.1 Illustrate the transfer of heat energy from warmer objects to cooler ones using examples of conduction, radiation, and convection.</p>	<p>Coming into this unit, students should have a strong foundation in:</p> <ul style="list-style-type: none"> ✓ Describing the effects of heat transfer between objects at different temperatures. ✓ Explaining how heating and cooling affects some materials and how this relates to their purpose and practical applications. ✓ Identifying the basic forms of energy (light, sound, heat, electrical, and magnetics) and how they have the ability to cause motion or create change. ✓ Understanding that light travels in a straight line until it strikes an object or travels from one medium to another. ✓ Summarizing the relationship between sound and objects of the body that vibrate – eardrum and



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<p>6.P.3.2 Explain the effects of electromagnetic waves on various materials to include absorption, scattering, and change in temperature.</p> <p>6.P.3.3 Explain the suitability of materials for use in technological design based on a response to heat (to include conduction, expansion, and contraction) and electrical energy (conductors and insulators).</p>	<p>vocal cords.</p> <p>This unit builds to the following future skills and concepts:</p> <ul style="list-style-type: none"> ✓ Explain the influence of convection, global winds and the jet stream on weather and climatic conditions. ✓ Recognize that energy can transfer from one system to another when two objects push or pull on each other over a distance and electrical circuits are a complete loop through which an electrical current can pass. ✓ Compare the physical changes such as size, shape and state to chemical changes that are the result of a chemical reaction to include changes in temperature, color, and formation of a gas or precipitate.
<p style="text-align: center;">Additional Resources</p> <p>Materials to support understanding and enrichment</p>	<p style="text-align: center;">“Learning Checks”</p> <p>Questions Parents Can Use to Assess Understanding</p>
<ul style="list-style-type: none"> ✓ CK12 Textbook: Sound ✓ CK12 Textbook: Waves ✓ CK12 Textbook: Visible Light ✓ CK12 Textbook: Thermal Energy ✓ CK12 Textbook: Electromagnetic Radiation ✓ Discovery Education TechBook <ul style="list-style-type: none"> ○ Sound Waves ○ Speed of Sound ○ Catch a Wave ○ Too Hot to Handle ○ Too Hot to Handle (Spanish) ○ Heat on the Move ○ Heat on the Move (Spanish) ○ Heat Transmission ○ Energy Transfer ○ Heat-Go-Round ○ Heat-Go-Round (Spanish) ○ Light Energy ✓ BBC Electromagnetic Spectrum Activity 	<ul style="list-style-type: none"> ✓ How is energy like a wave? ✓ What are the similarities and differences between the waves that produce earthquakes, light and sound? ✓ What is the nature of sound? ✓ How do we hear sound? ✓ How can you see different colors? ✓ What is the relationship between light and sound? ✓ How does heat travel? ✓ What are the effects of heat transfer? ✓ What are the similarities and differences between conduction, convection and radiation? ✓ How do electromagnetic waves interact with/affect different types of matter? ✓ How are materials chosen for different technological design projects?